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Sequence Listing was accepted.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).

Reviewer: Durreshwar Anjum

Timestamp: [year=2009; month=3; day=9; hr=14; min=9; sec=18; ms=909;]

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Application No: 10567938 Version No: 4.0

Input Set:**Output Set:**

Started: 2009-02-18 15:41:34.055
Finished: 2009-02-18 15:41:37.822
Elapsed: 0 hr(s) 0 min(s) 3 sec(s) 767 ms
Total Warnings: 24
Total Errors: 8
No. of SeqIDs Defined: 37
Actual SeqID Count: 37

Error code	Error Description
W 402	Undefined organism found in <213> in SEQ ID (1)
W 402	Undefined organism found in <213> in SEQ ID (4)
W 402	Undefined organism found in <213> in SEQ ID (5)
W 402	Undefined organism found in <213> in SEQ ID (6)
W 402	Undefined organism found in <213> in SEQ ID (7)
W 402	Undefined organism found in <213> in SEQ ID (8)
W 402	Undefined organism found in <213> in SEQ ID (9)
W 402	Undefined organism found in <213> in SEQ ID (10)
W 402	Undefined organism found in <213> in SEQ ID (11)
W 402	Undefined organism found in <213> in SEQ ID (12)
W 402	Undefined organism found in <213> in SEQ ID (13)
W 402	Undefined organism found in <213> in SEQ ID (14)
W 402	Undefined organism found in <213> in SEQ ID (15)
W 402	Undefined organism found in <213> in SEQ ID (17)
W 213	Artificial or Unknown found in <213> in SEQ ID (21)
E 224	<220>,<223> section required as <213> has Artificial sequence or Unknown in SEQID (21)
E 341	'Xaa' position not defined SEQID (21) POS (115)
E 341	'Xaa' position not defined SEQID (21) POS (116)
E 341	'Xaa' position not defined SEQID (21) POS (117)

Input Set:

Output Set:

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Total Warnings: 24
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Error code	Error Description
W 402	Undefined organism found in <213> in SEQ ID (22)
E 341	'Xaa' position not defined SEQID (22) POS (10)
E 341	'Xaa' position not defined SEQID (22) POS (11)
W 402	Undefined organism found in <213> in SEQ ID (23)
E 341	'Xaa' position not defined SEQID (23) POS (8)
W 402	Undefined organism found in <213> in SEQ ID (24)
W 402	Undefined organism found in <213> in SEQ ID (25)
W 402	Undefined organism found in <213> in SEQ ID (28)
W 402	Undefined organism found in <213> in SEQ ID (29) This error has occurred more than 20 times, will not be displayed
W 213	Artificial or Unknown found in <213> in SEQ ID (33)
W 213	Artificial or Unknown found in <213> in SEQ ID (37)
E 341	'Xaa' position not defined SEQID (37) POS (160)

SEQUENCE LISTING

<110> Peter S.N.Rowe

<120> REGULATION OF TISSUE MINERALIZATION AND
PHOSPHATE METABOLISM BY ASARM PEPTIDES

<130> 21105.0011U2

<140> 10567938

<141> 2006-07-13

<150> PCT/us04/30530

<151> 2003-09-19

<160> 37

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 19

<212> PRT

<213> Homo sapien

<400> 1

Arg	Asp	Asp	Ser	Ser	Glu	Ser	Ser	Asp	Ser	Gly	Ser	Ser	Ser	Glu	Ser
1				5					10					15	
Asp Gly Asp															

<210> 2

<211> 18

<212> PRT

<213> Mus musculus

<400> 2

Arg	Asp	Ser	Ser	Glu	Ser	Ser	Ser	Ser	Gly	Ser	Ser	Ser	Glu	Ser	His
1				5					10					15	
Gly Asp															

<210> 3

<211> 18

<212> PRT

<213> Rattus norvegicus

<400> 3

Arg	Asp	Ser	Ser	Glu	Ser	Ser	Ser	Ser	Gly	Ser	Ser	Ser	Glu	Ser	Ser
1				5					10					15	
Gly Asp															

<210> 4

<211> 24
<212> PRT
<213> Homo sapien

<400> 4
Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly
1 5 10 15
Ser Ser Ser Glu Ser Asp Gly Asp
20

<210> 5
<211> 25
<212> PRT
<213> Homo sapien

<400> 5
Cys Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser
1 5 10 15
Gly Ser Ser Ser Glu Ser Asp Gly Asp
20 25

<210> 6
<211> 26
<212> PRT
<213> Homo sapien

<400> 6
Cys Gly Ser Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile
1 5 10 15
Ser Pro Phe Ser Gly Asp Gly Gln Pro Phe
20 25

<210> 7
<211> 5
<212> PRT
<213> Homo sapien

<400> 7
Ala Pro Thr Phe Gln
1 5

<210> 8
<211> 5
<212> PRT
<213> Homo sapien

<400> 8
Asp Ser Glu Ser Ser
1 5

<210> 9

<211> 5
<212> PRT
<213> Homo sapien

<400> 9
Ser Ser Ser Glu Ser
1 5

<210> 10
<211> 15
<212> PRT
<213> Homo sapien

<400> 10
Ala Pro Thr Phe Gln Pro Gln Thr Glu Lys Thr Lys Gln Ser Cys
1 5 10 15

<210> 11
<211> 19
<212> PRT
<213> Homo sapien

<400> 11
Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser Gly
1 5 10 15
Asp Gly Gln

<210> 12
<211> 19
<212> PRT
<213> Homo sapien

<400> 12
Gly Arg Gln Pro His Ser Asn Arg Arg Phe Ser Ser Arg Arg Arg Asp
1 5 10 15
Asp Ser Ser

<210> 13
<211> 18
<212> PRT
<213> Homo sapien

<400> 13
Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser Asp
1 5 10 15
Gly Asp

<210> 14
<211> 19
<212> PRT
<213> Homo sapien

<220>

<221> VARIANT

<222> 12,14,16

<223> Xaa = a phosphorylated serine

<400> 14

Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly Xaa Ser Xaa Glu Xaa
1 5 10 15
Asp Gly Asp

<210> 15

<211> 25

<212> PRT

<213> Homo sapien

<400> 15

Gly Ser Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser
1 5 10 15
Pro Phe Ser Gly Asp Gly Gln Pro Phe
20 25

<210> 16

<211> 19

<212> PRT

<213> Macaca fascicularis

<400> 16

Arg Glu Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser
1 5 10 15
Asp Gly Asp

<210> 17

<211> 525

<212> PRT

<213> Homo sapien

<400> 17

Met Arg Val Phe Cys Val Gly Leu Leu Leu Phe Ser Val Thr Trp Ala
1 5 10 15
Ala Pro Thr Phe Gln Pro Gln Thr Glu Lys Thr Lys Gln Ser Cys Val
20 25 30
Glu Glu Gln Arg Gln Glu Glu Lys Asn Lys Asp Asn Ile Gly Phe His
35 40 45
His Leu Gly Lys Arg Ile Asn Gln Glu Leu Ser Ser Lys Glu Asn Ile
50 55 60
Val Gln Glu Arg Lys Lys Asp Leu Ser Leu Ser Glu Ala Ser Glu Asn
65 70 75 80
Lys Gly Ser Ser Lys Ser Gln Asn Tyr Phe Thr Asn Arg Gln Arg Leu
85 90 95
Asn Lys Glu Tyr Ser Ile Ser Asn Lys Glu Asn Thr His Asn Gly Leu
100 105 110
Arg Met Ser Ile Tyr Pro Lys Ser Thr Gly Asn Lys Gly Phe Glu Asp

115	120	125
Gly Asp Asp Ala Ile Ser Lys Leu His Asp Gln Glu Glu Tyr Gly Ala		
130	135	140
Ala Leu Ile Arg Asn Asn Met Gln His Ile Met Gly Pro Val Thr Ala		
145	150	155
Ile Lys Leu Leu Gly Glu Glu Asn Lys Glu Asn Thr Pro Arg Asn Val		
165	170	175
Leu Asn Ile Ile Pro Ala Ser Met Asn Tyr Ala Lys Ala His Ser Lys		
180	185	190
Asp Lys Lys Lys Pro Gln Arg Asp Ser Gln Ala Gln Lys Ser Pro Val		
195	200	205
Lys Ser Lys Ser Thr His Arg Ile Gln His Asn Ile Asp Tyr Leu Lys		
210	215	220
His Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly Ser Gly		
225	230	235
Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser		
245	250	255
Gly Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr		
260	265	270
Gly Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe Ala Gly Pro		
275	280	285
Ser Glu Ala Glu Ser Thr His Leu Asp Thr Lys Lys Pro Gly Tyr Asn		
290	295	300
Glu Ile Pro Glu Arg Glu Glu Asn Gly Gly Asn Thr Ile Gly Thr Arg		
305	310	315
Asp Glu Thr Ala Lys Glu Ala Asp Ala Val Asp Val Ser Leu Val Glu		
325	330	335
Gly Ser Asn Asp Ile Met Gly Ser Thr Asn Phe Lys Glu Leu Pro Gly		
340	345	350
Arg Glu Gly Asn Arg Val Asp Ala Gly Ser Gln Asn Ala His Gln Gly		
355	360	365
Lys Val Glu Phe His Tyr Pro Pro Ala Pro Ser Lys Glu Lys Arg Lys		
370	375	380
Glu Gly Ser Ser Asp Ala Ala Glu Ser Thr Asn Tyr Asn Glu Ile Pro		
385	390	395
Lys Asn Gly Lys Gly Ser Thr Arg Lys Gly Val Asp His Ser Asn Arg		
405	410	415
Asn Gln Ala Thr Leu Asn Glu Lys Gln Arg Phe Pro Ser Lys Gly Lys		
420	425	430
Ser Gln Gly Leu Pro Ile Pro Ser Arg Gly Leu Asp Asn Glu Ile Lys		
435	440	445
Asn Glu Met Asp Ser Phe Asn Gly Pro Ser His Glu Asn Ile Ile Thr		
450	455	460
His Gly Arg Lys Tyr His Tyr Val Pro His Arg Gln Asn Asn Ser Thr		
465	470	475
Arg Asn Lys Gly Met Pro Gln Gly Lys Gly Ser Trp Gly Arg Gln Pro		
485	490	495
His Ser Asn Arg Arg Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu		
500	505	510
Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser Asp Gly Asp		
515	520	525

<210> 18

<211> 433

<212> PRT

<213> Mus musculus

<400> 18

Met Gln Ala Val Ser Val Gly Leu Leu Leu Phe Ser Met Thr Trp Ala
1 5 10 15
Ala Pro Met Pro Asn Glu Asp Arg Ser Ser Cys Gly Asn Gln Asp Ser
20 25 30
Ile His Lys Asp Leu Ala Ala Ser Val Tyr Pro Asp Pro Thr Val Asp
35 40 45
Glu Gly Thr Glu Asp Gly Gln Gly Ala Leu Leu His Pro Pro Gly Gln
50 55 60
Asp Arg Tyr Gly Ala Ala Leu Leu Arg Asn Ile Thr Gln Pro Val Lys
65 70 75 80
Ser Leu Val Thr Gly Ala Glu Leu Arg Arg Glu Gly Asn Gln Glu Lys
85 90 95
Arg Pro Gln Ser Val Leu Ser Val Ile Pro Ala Asp Val Asn Asp Ala
100 105 110
Lys Val Ser Leu Lys Asp Ile Lys Asn Gln Glu Ser Tyr Leu Leu Thr
115 120 125
Gln Ser Ser Pro Val Lys Ser Lys His Thr Lys His Thr Arg Gln Thr
130 135 140
Arg Arg Ser Thr His Tyr Leu Thr His Leu Pro Gln Ile Lys Lys Thr
145 150 155 160
Pro Ser Asp Leu Glu Gly Ser Gly Ser Pro Asp Leu Leu Val Arg Gly
165 170 175
Asp Asn Asp Val Pro Pro Phe Ser Gly Asp Gly Gln His Phe Met His
180 185 190
Ile Pro Gly Lys Gly Gly Ala Gly Ser Gly Pro Glu Ser Ser Thr Ser
195 200 205
Arg Pro Leu Ser Gly Ser Ser Lys Ala Glu Val Ile Asp Pro His Met
210 215 220
Ser Gly Leu Gly Ser Asn Glu Ile Pro Gly Arg Glu Gly His Gly Gly
225 230 235 240
Ser Ala Tyr Ala Thr Arg Asp Lys Ala Ala Gln Gly Ala Gly Ser Ala
245 250 255
Gly Gly Ser Leu Val Gly Gly Ser Asn Glu Ile Thr Gly Ser Thr Asn
260 265 270
Phe Arg Glu Leu Pro Gly Lys Glu Gly Asn Arg Ile Asn Ala Gly Ser
275 280 285
Gln Asn Ala His Gln Gly Lys Val Glu Phe His Tyr Pro Gln Val Ala
290 295 300
Ser Arg Glu Lys Val Lys Gly Gly Val Glu His Ala Gly Arg Ala Gly
305 310 315 320
Tyr Asn Glu Ile Pro Lys Ser Ser Lys Gly Ser Ser Ser Lys Asp Ala
325 330 335
Glu Glu Ser Lys Gly Asn Gln Leu Thr Leu Thr Ala Ser Gln Arg Phe
340 345 350
Pro Gly Lys Gly Lys Ser Gln Gly Pro Ala Leu Pro Ser His Ser Leu
355 360 365
Ser Asn Glu Val Lys Ser Glu Glu Asn His Tyr Val Phe His Gly Gln
370 375 380
Asn Asn Leu Thr Pro Asn Lys Gly Met Ser Gln Arg Arg Gly Ser Trp
385 390 395 400
Pro Ser Arg Arg Pro Asn Ser His Arg Arg Ala Ser Thr Arg Gln Arg
405 410 415
Asp Ser Ser Glu Ser Ser Ser Ser Gly Ser Ser Ser Glu Ser His Gly
420 425 430

Asp

<210> 19
 <211> 435
 <212> PRT
 <213> Rattus norvegicus

<400> 19
 Met Gln Ala Val Ser Val Gly Leu Phe Leu Phe Ser Met Thr Trp Ala
 1 5 10 15
 Ala Pro Lys Leu Asn Glu Asp Gly Ser Ser Gly Gly Asn Gln Gly Asn
 20 25 30
 Ile His Leu Ala Ser Val Lys Pro Glu Pro Met Val Gly Lys Gly Thr
 35 40 45
 Glu Gly Gly Arg Asp Ala Pro Leu His Leu Leu Asp Gln Asn Arg Gln
 50 55 60
 Gly Ala Thr Leu Leu Arg Asn Ile Thr Gln Pro Val Lys Ser Leu Val
 65 70 75 80
 Thr Gly Thr Glu Val Gln Ser Asp Arg Asn Lys Glu Lys Lys Pro Gln
 85 90 95
 Ser Val Leu Ser Val Ile Pro Thr Asp Val His Asn Thr Asn Asp Tyr
 100 105 110
 Ser Glu Asp Thr Glu Asn Gln Gln Arg Asp Leu Leu Leu Gln Asn Ser
 115 120 125
 Pro Gly Gln Ser Lys His Thr Pro Arg Ala Arg Arg Ser Thr His Tyr
 130 135 140
 Leu Thr His Leu Pro Gln Ile Arg Lys Ile Leu Ser Asp Phe Glu Asp
 145 150 155 160
 Ser Ala Ser Pro Asp Leu Leu Val Arg Gly Asp Asn Asp Val Pro Pro
 165 170 175
 Phe Ser Gly Asp Gly Gln His Phe Met His Thr Pro Asp Arg Gly Gly
 180 185 190
 Ala Val Gly Ser Asp Pro Glu Ser Ser Ala Gly His Pro Val Ser Gly
 195 200 205
 Ser Ser Asn Val Glu Ile Val Asp Pro His Thr Asn Gly Leu Gly Ser
 210 215 220
 Asn Glu Ile Pro Gly Arg Glu Gly His Ile Gly Gly Ala Tyr Ala Thr
 225 230 235 240
 Arg Gly Lys Thr Ala Gln Gly Ala Gly Ser Ala Asp Val Ser Leu Val
 245 250 255
 Glu Gly Ser Asn Glu Ile Thr Gly Ser Thr Lys Phe Arg Glu Leu Pro
 260 265 270
 Gly Lys Glu Gly Asn Arg Val Asp Ala Ser Ser Gln Asn Ala His Gln
 275 280 285
 Gly Lys Val Glu Phe His Tyr Pro Gln Ala Pro Ser Lys Glu Lys Val
 290 295 300
 Lys Gly Gly Ser Arg Glu His Thr Gly Lys Ala Gly Tyr Asn Glu Ile
 305 310 315 320
 Pro Lys Ser Ser Lys Gly Gly Ala Ser Lys Asp Ala Glu Glu Ser Lys
 325 330 335
 Gly Asn Gln Val Thr Leu Thr Glu Ser Gln Arg Phe Pro Gly Lys Gly
 340 345 350
 Lys Gly Gln Ser Ser His Ser Leu Gly Asn Glu Val Lys Ser Glu Glu
 355 360 365
 Asp Ser Ser Asn Ser Leu Ser Arg Glu Gly Ile Ala Ile Ala His Arg
 370 375 380
 Arg Thr Ser His Pro Thr Arg Asn Arg Gly Met Ser Gln Arg Arg Gly

385 390 395 400
 Ser Trp Ala Ser Arg Arg Pro His Pro His Arg Arg Val Ser Thr Arg
 405 410 415
 Gln Arg Asp Ser Ser Glu Ser Ser Ser Ser Gly Ser Ser Ser Glu Ser
 420 425 430
 Ser Gly Asp
 435

<210> 20

<211> 555

<212> PRT

<213> *Macaca fascicularis*

<400> 20

Met Arg Val Phe Cys Val Gly Leu Leu Phe Leu Ser Val Thr Trp Ala
 1 5 10 15
 Ala Pro Thr Phe Gln Pro Gln Thr Glu Lys Thr Lys Gln Ser Cys Val
 20 25 30
 Glu Glu Gln Arg Ile Thr Tyr Lys Gly His His Glu Lys His Gly His
 35 40 45
 Tyr Val Phe Lys Cys Val Tyr Met Ser Pro Gly Lys Lys Asn Gln Thr
 50 55 60
 Asp Val Lys Gln Glu Glu Lys Asn Lys Asp Asn Ile Gly Leu His His
 65 70 75 80
 Leu Gly Lys Arg Arg Tyr Gln Glu Leu Ser Ser Lys Glu Asn Ile Val
 85 90 95
 Gln Glu Arg Lys Lys Asp Leu Ser Leu Ser Glu Ala Gly Glu Asn Asn
 100 105 110
 Gly Ser Ser Lys Ser Gln Asn Tyr Phe Thr Asn Arg Gln Arg Leu Asn
 115 120 125
 Lys Glu Tyr Ser Ile Ser Asn Lys Glu Asn Ile His Asn Gly Leu Arg
 130 135 140
 Met Ser Ile Tyr Pro Lys Ser Thr Gly Asn Lys Gln Phe Ala Asp Gly
 145 150 155 160
 Asp Asp Ala Ile Ser Glu Leu His Asp Gln Glu Glu Tyr Gly Ala Ala
 165 170 175
 Leu Ile Arg Asn Asn Met Gln His Ile Met Gly Pro Val Thr Ala Ile
 180 185 190
 Lys Leu Leu Gly Glu Glu Asn Lys Gln Ser Lys Pro Lys Asn Val Leu
 195 200 205
 Asn Lys Ile Pro Ala Ser Met Asn Tyr Ala Lys Ala His Ser Lys Asp
 210 215 220
 Lys Lys Lys Pro Gln Arg Asp Ser Gln Val Gln Lys Val Pro Val Lys
 225 230 235 240
 Ser Lys Ser Thr His Arg Thr Gln His Asn Ile Asp Tyr Pro Lys His
 245 250 255
 Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly Ser Gly Tyr
 260 265 270
 Thr Asp Leu Gln